

**Claims**

1. A method analysing body tissue, the method comprising obtaining at least two components of data, wherein data representing a first measured tissue property of a body tissue sample is obtained; data representing a second, different measured tissue property of the tissue sample is obtained; and the respective data is used in combination to provide an analysis of the tissue sample.
2. A method for characterising body tissue, the method comprising obtaining at least two components of data, wherein data representing a first measured tissue property of a body tissue sample is obtained; data representing a second, different measured tissue property of the tissue sample is obtained; and the respective data is used in combination to provide a characterisation of the tissue sample.
3. A method according to claim 2, wherein the characterisation consists of characterising the tissue sample as normal or abnormal.
4. A method according to claim 2, wherein the characterisation comprises various grades of abnormality.
5. A method according to claim 2, wherein the characterisation comprises tissue typing.
6. A method according to any preceding claim, wherein the method comprises obtaining at least three components of data representing three different measured tissue properties, the obtained data being used in combination to provide the analysis or characterisation of the tissue sample.
7. A method according to any of claims 1 to 5, wherein the method comprises obtaining at least four components of data representing four different measured tissue properties, the obtained data being used in combination to provide the analysis or characterisation of the tissue sample.
8. A method according to any preceding claim, wherein techniques used to obtain the tissue property data include: x-ray fluorescence (XRF); energy or angular dispersive x-ray diffraction (EDXRD); Compton scatter densitometry; and/or low angle x-ray scattering and the measurement of linear attenuation (transmission) coefficients.
9. A method according to any preceding claim, wherein the measured tissues properties include the composition of the tissue sample.
10. A method according to any preceding claim, wherein the data is used in combination to obtain the desired result by using the data as the input to a predefined calibration model that relates the combined data to at least one tissue characteristic.

11. A method for creating a tool for the analysis and/or characterisation of body tissue, the method comprising creating a calibration model that relates data representing at least two measurable tissue properties to at least one tissue characteristics.
12. A method according to claim 11, wherein the method comprises creating a calibration model that relates data representing at least three measurable tissue properties to at least one tissue characteristics.
13. A method according to claim 11, wherein the method comprises creating a calibration model that relates data representing at least four measurable tissue properties to at least one tissue characteristics.
14. A method according to any of claims 11 to 13, wherein the calibration model is produced by using sets of the measured data from tissue samples for which the characteristic to be determined by the model are already known.
15. A method for analysing and/or characterising body tissue, the method comprising: obtaining Compton scatter data measured from a body tissue sample on which a penetrating radiation beam is incident; and using the data to provide an analysis and/or characterisation of the tissue sample.
16. A method according to claim 15, wherein the Compton scatter data is a count of photons detected at a selected angle/energy.
17. A method according to claim 16, wherein the photons detected at a selected angle/energy is a count for a given time period.
18. A method according to claim 16 or claim 17, wherein the Compton scatter data is an absolute measure of electron density.
19. A method according to any of claims 15 to 18, wherein the Compton scatter data is corrected for attenuation in the tissue sample.
20. A method according to claim 19, wherein the attenuation is corrected by the use of two radiation sources and two detectors.
21. A method according to claim 19, wherein the attenuation is corrected by obtaining data representing a measure of the directly transmitted x-ray radiation for each Compton scatter measurement.
22. A method according to claim 15, wherein the method is for analysing and/or characterising body tissue in vivo.

23. A method according to claim 15, wherein the method is for analysing and/or characterising body tissue in vitro.
24. A method for creating a tool for the analysis and/or characterisation of body tissue, the method comprising the use of a predefined calibration model that relates Compton scatter data to at least one tissue characteristic.